SAMGrid Overview

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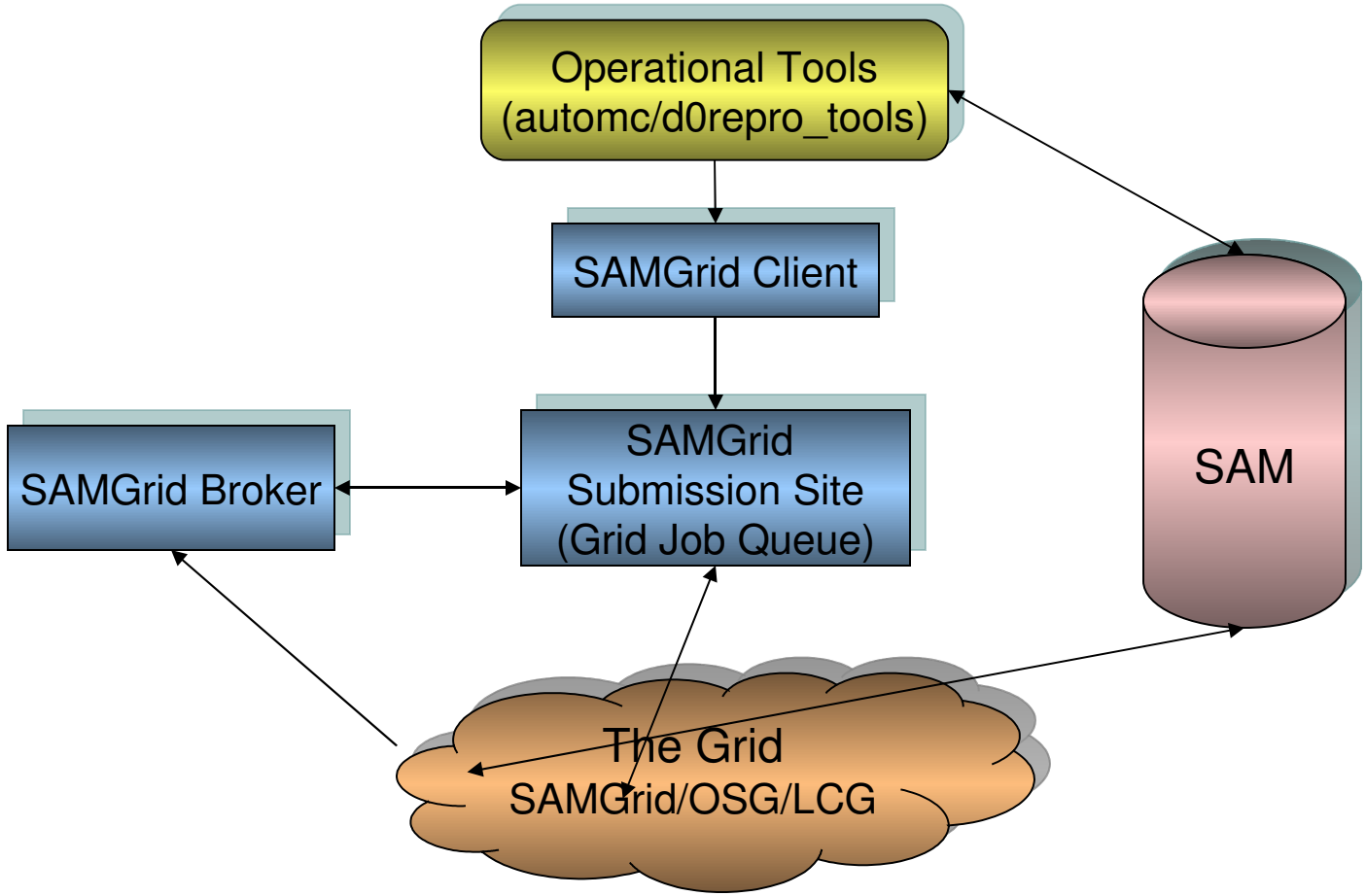
Overview

- SAMGrid & DØ
- SAMGrid in a Nutshell
- More About “The Grid”
- Forwarding “The Grand Scheme”
- The Job
- Data Handling with SAM
- SAMGrid - Application Centric

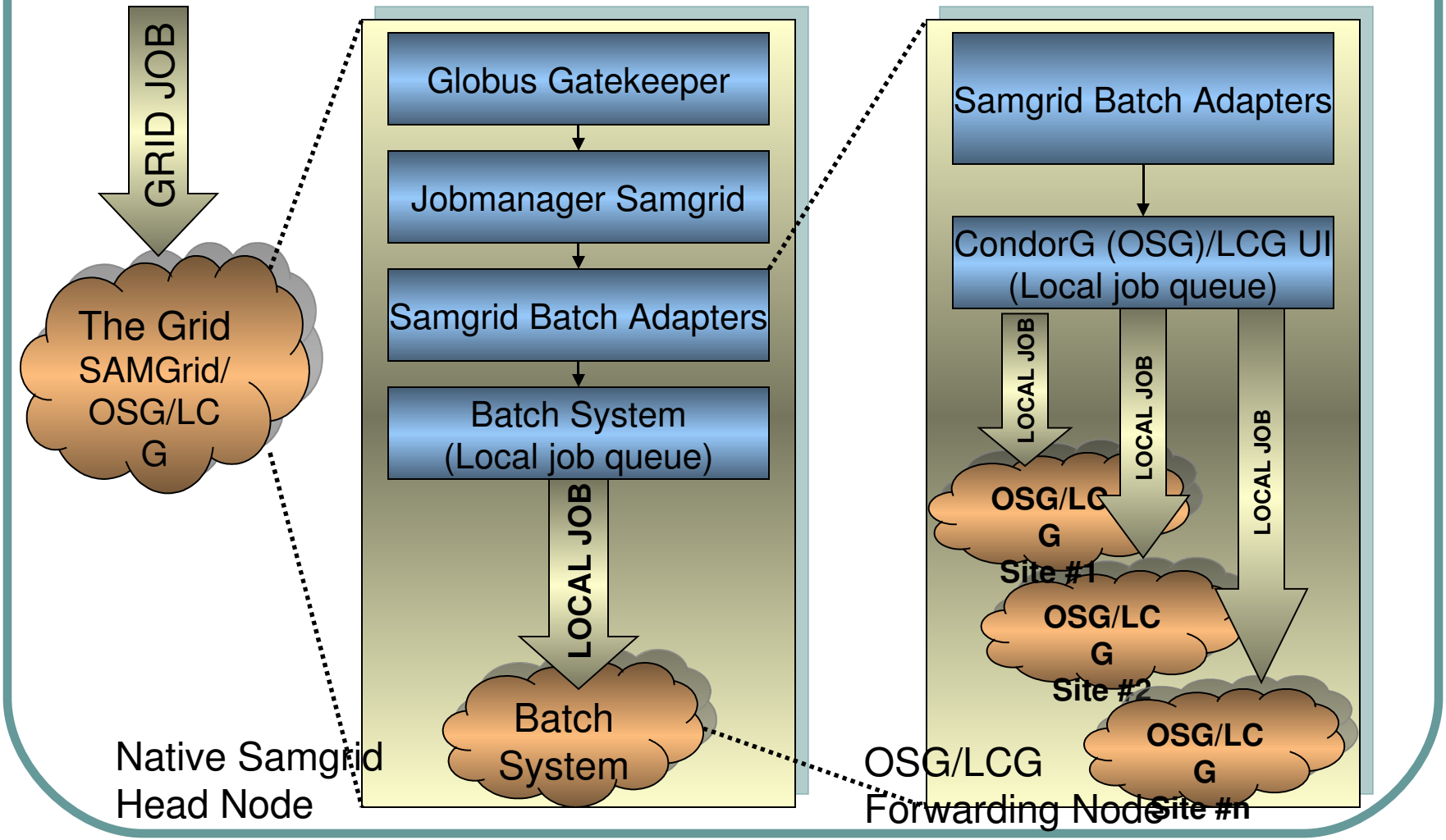
SAMGrid & DØ

- SAMGrid (JIM + SAM)
  - DØ's way of using computing resources on the grid
    - Monte Carlo
    - Reprocessing
    - Refixing
    - Skimming (Beta Testing)

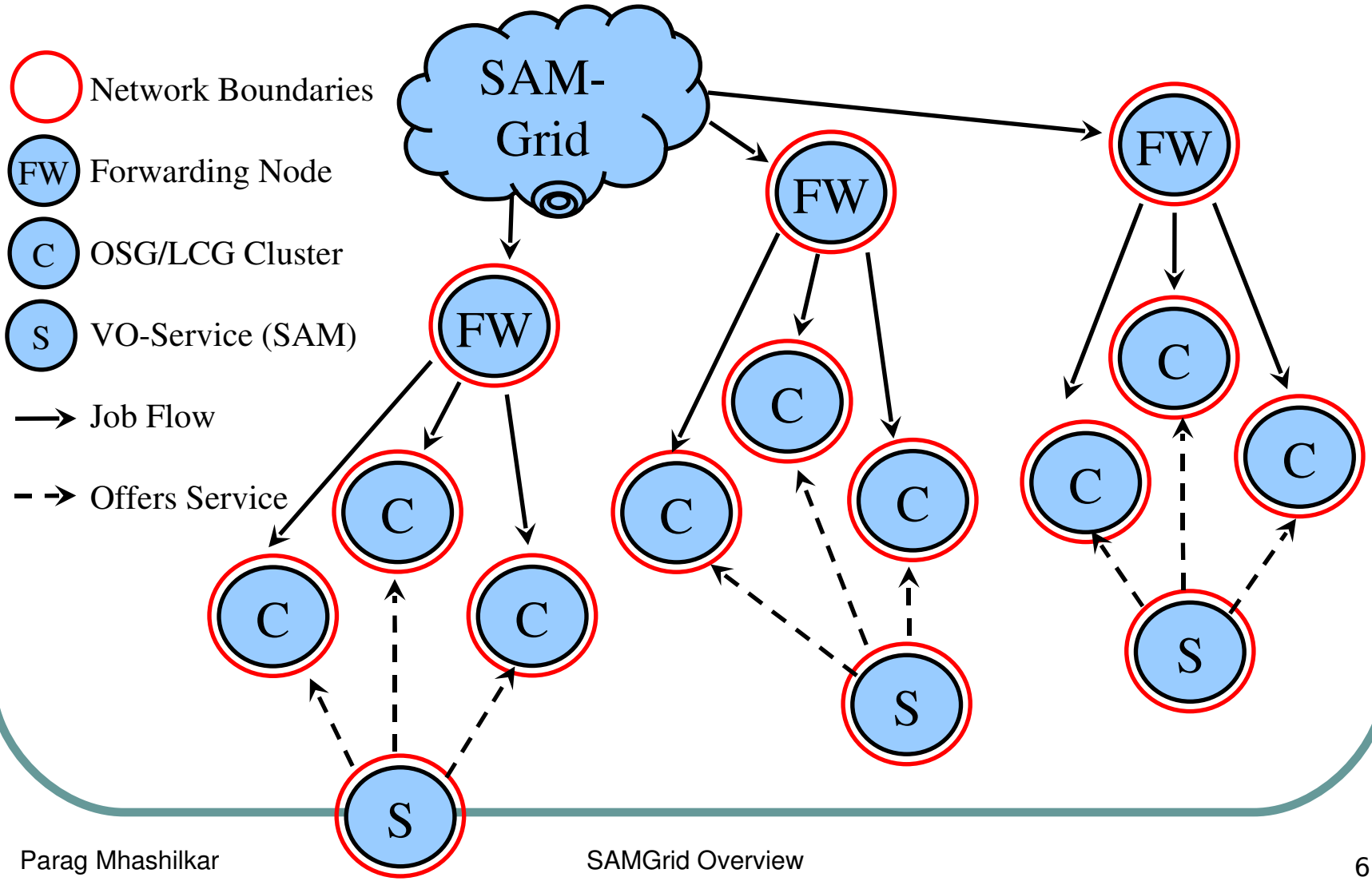
SAMGrid in a Nutshell



More About “The Grid”



Forwarding "The Grand Scheme"



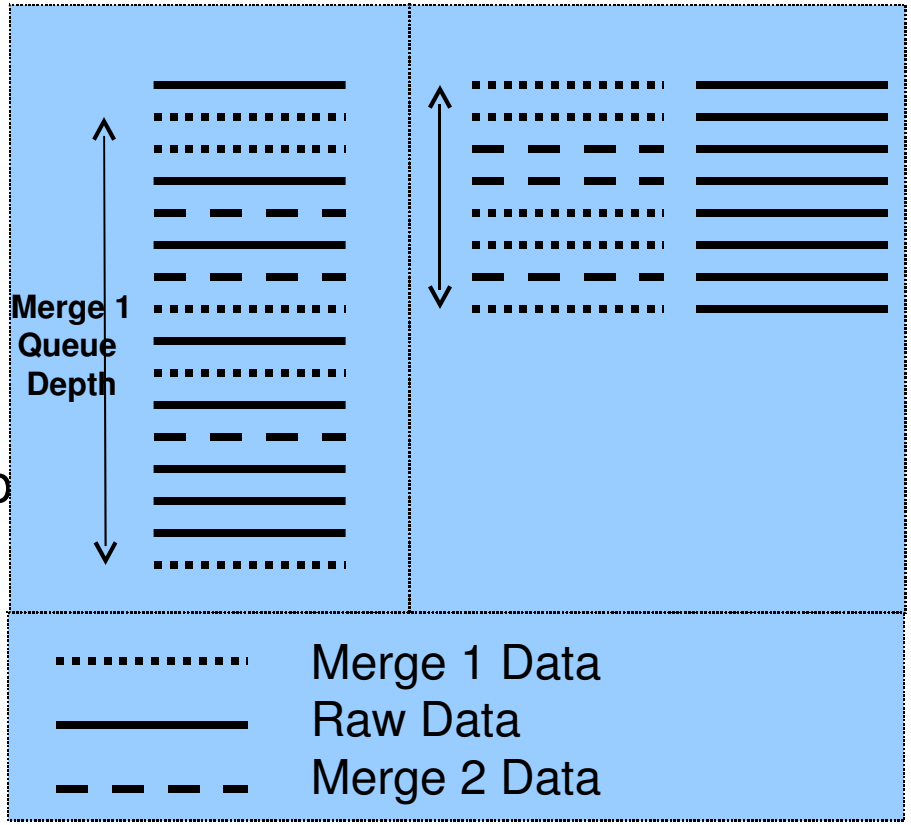
The Job

- Grid Job
  - Single grid job splits into several local jobs based on the job type.
  - Start the project for data distribution using SAM based on the job type.
- Local Job (Batch/OSG/LCG Job)

Tasks common to all job types	Tasks specific to all job types
Bootstrapping script initiates the process and fetches the input sandbox from the SAMGrid head/forwarding node	
	Fetch and deploy the binaries (RTE + D0Runjob) from SAM based on the job type
	Fetch the input data from SAM using job type specific data queues
	Setup the environment and generate D0runjob macro. Process the input data.
	D0runjob or SAMGrid stores the output back to SAM based on the job type (Tape v/s SAM)
Cleanup and exit.	

Data Handling with SAM

- SAM - Data management in SAMGrid
- Jobs get input data from tapes or SAM disks
- Jobs store the output data to tapes or SAM disks
- Data Handling optimized using data queues.
  - SAM can be configured to use sam_fcp for data transfers
  - sam_fcp queues based on job types
  - sam_fcp queues based on the data transfer rate.



SAMGrid - Application Centric

- Application specific knowledge embedded in SAMGrid
  - Number of local jobs to split into
  - Fetching/Setting up of binary and input data
  - Generation of Macro and Metadata
  - Merging
- Above steps done in SAMGrid as an optimization step.
- Prevents us from doing business in a general manner.
- Supporting new job types requires changes to SAMGrid packages.
- Increases the development/integration/testing cycle.
- We could do better in splitting the application specific functionalities between SAMGrid and D0Runjob
  - 100% splitting may not be possible.

Wrapping Up

- DØ's uses computing resources on the grid using SAMGrid (JIM + SAM)
- JIM does Job management while SAM does the Data management
- SAMGrid has been optimized at various levels to serve the experiments needs.
- Optimization, at the cost of losing generalization making SAMGrid more and more application aware.
- Time to split the application specific knowledge from SAMGrid into D0Runjob for ease of support and maintenance in future.
- 100% splitting of functionality not possible, but we can definitely do better.